Strand Name	Strand Description	Grade Level Focus	Presenter
College of Southern Idaho: June 27-30			
Administrative Strand - One Day Workshop (June 28)	Establishing essential learning targets and aligning our curriculum to the Idaho Core and Next Generation Science Standards has its challenges. What are we going to teach? How are we going to teach it? How are we preparing our teachers? The integration of STEM and other best practices will assist us in preparing our students for the workplace of today and tomorrow. Administrators in this workshop will experience the excitement of an integrated STEM activity. They also will define action plans for implementing "Inquiry Teaching", and bolstering the STEM process in their schools. Participants will have a hands-on experience using diverse types of activities and technology to this end. Project: A completed action plan of implementation involving the Idaho Core as well as the Next Generation Science Standards in their schools. (STEM Related) Activities: 1. Parable Mirror study reflecting optical illusions. 2. Studying Sound waves through music and a ukulele. Using many disciplines to educate students by integration and cross-curricular teaching. Emphasis will be given to the details and writing about the science experience using details and supportive facts.		Lyndon Oswald
Vertical Alignment in Secondary Math	How often have you wished for time, space, and the right people at the table to have a meaningful dialogue about what math students learn in the grade before or after yours? You're not alone—enough people have asked that we've developed a special strand just for these topics. Vertical alignment between grade levels, alignment within grade levels, and cross-content teaching strategies will result in an actionable plan to improve secondary math by the week's end. **Strand participants will need to commit to attend a follow-on workshop at CSI on Saturday, October 22.**	Grades 7-12	Chrissy Waitley Shannon Green

Strand Name	Strand Description	Grade Level Focus	Presenter
Getting Dirty with STEM	Discover how the geologic processes in your local area effect the communities that exists there through what grows there- its agriculture. Participants in this strand will engineer soil column with simple materials and use it as a basis for learning geology (earth science), soil science, and agricultural science STEM across grade levels, subject areas, and NGSS science content standards. A series of hands-on inquiry activities and field trips will support the learning. Participants will receive a kit of materials that can be used in multiple ways in varying classroom settings to simulate geologic processes for analytical analyses.	Grades 4-12	Eian Harm
Using BrickLab as a Learning Tool	K-3 Participants use PCS BrickLab to engage students in engineering; using bricks to inspire learning, exploring and real life applications. PCS BrickLab emphasizes hands-on construction through a series of activities. PCS BrickLab teacher's guide provides complete lesson plans for science, math, language arts and social studies. These lessons make solving problems, creating innovative projects, and even creative/scientific writing easy to integrate into your classroom.	Grades K-3	Jill Janicek
Probability and Statistics in Gaming	From simple dice rolling to casino games and board games and table top RPGs, probability and the idea of randomness is inundated with games. This strand uses these activities to introduce students to the basic rules and ideas behind probability and statistics and analyzes how games of all kinds use randomness and probability to add exciting and challenging gameplay for various audiences. Educators will leave this strand with a classroom set of materials that can easily be taken into the Secondary Mathematics classroom to help students to understand fundamental statistics principles.	6-12 Math	Brian Mattison
High School Chemistry and Biology POGIL	This strand focuses on inquiry based learning for chemistry and biology. The POGIL (process oriented guided inquiry learning) methodology will be modeled and participants will engage in hands on activities that reinforce the inquiry learning. Several of the activities are a competitive challenge that brings a heightened interest to the classroom. Topics for the lessons include: Classification of Matter, Acids and Bases, and Photosynthesis	Grades 10-12	Bonnie Wehausen

Strand Name	Strand Description	Grade Level Focus	Presenter
STEM on the Playground for Pre-Service and New to the Profession Teachers	The purpose of the strand is to provide hands-on teaching experiences for pre service teachers and teachers with less than three years teaching experience. The strand will show participants how to integrate the excitement STEM brings to the curriculum with outstanding literature (both fiction and nonfiction) and all this using local school grounds to enhance classroom instruction. Strand participants will have the opportunity to learn in the morning and then teach those lessons to k-6 students in the afternoon. Participants will leave the strand with lesson ideas they have actually taught in the classroom. The life sciences and related math skills will be heavily emphasized. Life science and math will be integrated with pertinent literature and will use playgrounds for the instructional setting. Participants will come away with lots of ideas for using STEM subjects to meet Next Generation Science Standards, suggestions for using good literature to reinforce the STEM instruction while meeting state literary standards, and methods for utilizing playgrounds for maximum learning and excitement.	Grades K-6	Mike Winston
Sticks and stones may break my bones; but Material Science will heal them better	Material science is the “new black” when it comes to STEM. In this strand, participants will learn about metals, ceramics, polymers, composites, semi-conductors, and exciting biomaterials during this interdisciplinary investigation into the world of material science. We will explore the scientific fundamentals of materials, their design and real world application as participants learn to apply the basic principles of chemistry and physics to materials and leave with the ability to design processes to manipulate materials to meet the needs of modern technology.	Grades 4-8	Sally Mitchell

Strand Name	Strand Description	Grade Level Focus	Presenter
College of Western Idaho: June 27-30			
Administrative Strand - One Day Workshop (June 27)	Establishing essential learning targets and aligning our curriculum to the Idaho Core and Next Generation Science Standards has its challenges. What are we going to teach? How are we going to teach it? How are we preparing our teachers? The integration of STEM and other best practices will assist us in preparing our students for the workplace of today and tomorrow. Administrators in this workshop will experience the excitement of an integrated STEM activity. They also will define action plans for implementing "Inquiry Teaching", and bolstering the STEM process in their schools. Participants will have a hands-on experience using diverse types of activities and technology to this end. Project: A completed action plan of implementation involving the Idaho Core as well as the Next Generation Science Standards in their schools. (STEM Related) Activities: 1. Parable Mirror study reflecting optical illusions. 2. Studying Sound waves through music and a ukulele. Using many disciplines to educate students by integration and cross-curricular teaching. Emphasis will be given to the details and writing about the science experience using details and supportive facts.		Lyndon Oswald
Birds Without Borders	Participants in Birds Without Borders strand will learn to 1) identify birds by both sight and sound, 2) mist net, band, measure, and release live birds, 3) calculate how many caterpillars it takes for a migrating bird to survive versus a human, 4) set up and maintain bird feeders; 5) involve students in collecting and entering bird data into citizen science databases, 6) collect and analyze bird data for comparing biodiversity, and 7) teach science concepts and process skills through the "$QPOE_2$" model of inquiry developed by the Van Andel Education Institute.	Grades 7-12	Kris Ablin-Stone
Introduction to Near Space	Near space is air space above 60,000 feet and it looks and feels like outer space. This strand will acquaint you with how your students can send science experiments into this exciting region of Earth's atmosphere. The strand will include a near space launch.	K-12	L. Paul Verhage

Strand Name	Strand Description	Grade Level Focus	Presenter
Blown Away: A Wind Energy Design Challenge	Renewables like wind energy will play an important role in the future of electricity generation. The Blown Away strand will provide middle-school educators with a background on energy topics before delving into the details of wind energy, its pros and cons, wind turbine technology and siting, gears and electricity generation. Participants will then design, build and test small wind turbines to compete against each other in two wind turbine design challenges while documenting their design process in a science notebook.	Grades 7-9	Sandy Cardon
Sparking a Passion for STEM - Integrating Inquiry & Engineering into hands-on STEM activities	This strand will include instruction in inquiry learning through hands-on activities to help teachers get students engaged in the classroom. Teachers will learn the hows and whys of facilitating grade-level appropriate, standards-aligned science and engineering activities in the physical sciences, including connections to project-based and cross-curricular lessons. The sessions will be facilitated by the Micron Foundation K-12 staff, content experts from Micron and a Master Teacher.	Grades 4-8	Laurie Anderson
Empowering the Next Generation Through Computer Science	Participants will learn how to teach computer science skills such as critical thinking, logic, persistence and creativity in problem-solving aligned to all subject areas. Computer science and computational thinking skills will be addressed through hands-on "unplugged" and online activities, including computer programming and coding. Additionally, participants will learn how to adapt their programs to create computers that can both sense and interact with their environment. Computer science curriculum provided by Code.org and MIT Media Lab will be utilized.	Grades K-8	Heidi Pluska
Energy For Future Citizens	Energy For Future Citizens will jump right in with hands on experiments related to the Science of Energy. Through discovery and discussion, you'll learn about generation sources with emphasis on Solar, Wind, Nuclear, Energy Efficiency and Natural Gas. In the Global Trading Game, you'll experience an integrated, multidisciplinary lesson firsthand. If you're an intermediate or secondary level teacher, you'll leave with the background knowledge necessary to get your students excited and engaged in energy discussions. And you'll take home a robust classroom kit containing all the materials needed to stage effective hands-on activities for immediate use in your classroom. The curriculum used is from the NEED (National Energy Education Development) Project.	Grades 6-8, 9-12	Denise Humphreys

Strand Name	Strand Description	Grade Level Focus	Presenter
Scratch and WeDo integration in the classroom	We will be working to integrate Scratch and WeDo into current classroom curriculum. These platforms are an easy way to introduce computer science into the middle school classroom. After taking this class teachers will feel comfortable with the following objectives: (1) Be able to program simple games and stories in Scratch. (2) Use the WeDos to interface with programming	Grades 5-8	Andrea Baerwald
Water: Innovations for the Future	Through field investigations, classroom activities and professional presentations, teacher will explore topics and activities relating to the themes of human and natural systems, engineered treatment processes, effects of climate change and natural disasters, human health and conservation practices. We will feature discussions of adaptive strategies, including personal and public conservation actions to address water resource within the context of environmental change. This course features award winning classroom ready interdisciplinary activities, well suited to supporting the integration of STEM and Next Generation Science practices in your classroom. Applicable to 4th – 8th grade teachers.	Grades 4-6	Julie Scanlin

Strand Name	Strand Description	Grade Level Focus	Presenter
Eastern Idaho Technical College: June 27-30			
Administrative Strand - One Day Workshop (June 29)	Establishing essential learning targets and aligning our curriculum to the Idaho Core and Next Generation Science Standards has its challenges. What are we going to teach? How are we going to teach it? How are we preparing our teachers? The integration of STEM and other best practices will assist us in preparing our students for the workplace of today and tomorrow. Administrators in this workshop will experience the excitement of an integrated STEM activity. They also will define action plans for implementing "Inquiry Teaching", and bolstering the STEM process in their schools. Participants will have a hands-on experience using diverse types of activities and technology to this end. Project: A completed action plan of implementation involving the Idaho Core as well as the Next Generation Science Standards in their schools. (STEM Related) Activities: 1. Parable Mirror study reflecting optical illusions. 2. Studying Sound waves through music and a ukulele. Using many disciplines to educate students by integration and cross-curricular teaching. Emphasis will be given to the details and writing about the science experience using details and supportive facts.		Lyndon Oswald
Nourishing the Planet in the Twenty-First Century	The earth resources are used to feed the world, being scarce we need to use them wisely. Feeding the world in the next 50 years will take a lot of new workers and new technologies. Lots of hands on materials (labs) and procedures that can be adapted to any classroom and any age will be provided. Modern technology will be used to create the 21st century classroom learning environment where careers and the high tech world of Agriculture can be explored. The main topics will be soil health and plant growth with many side topics that relate.	Grades 4-12	Vince Wray
iSTEM – It All Adds Up	iSTEM, It All Adds Up delves into the eight math practice standards. Whatever your curriculum, these standards are a guide to good math instruction. They are the foundation for rich thinking and engaging instruction. Participants will learn how to incorporate these standards into their current curriculum. They will learn strategies, receive hands on activities, learn alternative methods for assessing student learning, and learn how to plan engaging instruction.	Grades K-3	Michelle Stratton

Strand Name	Strand Description	Grade Level Focus	Presenter
3, 2, 1 Energize your classroom	3, 2, 1 Energize your classroom with STEM lessons on work, power and energy. Energy is all around us from morning to night, our lives are full of energy. Explore energy, work and power in toy design, flight, solar and wind power. Electrify, energize and come join us for physics phun with energy.	Grades 3-12	Karen Laitinen
Teaching Nuclear Science	Explore innovative concepts and tools to teach nuclear science, energy, safety, and engineering principles. Get new ideas to help students understand radiation and the physics of energy from the nucleus of atoms. Preview The Harnessed Atom, a 10-lesson kit that engages students with hands-on experiments, interactive learning, and career opportunities. This workshop introduces The Harnessed Atom, a new energy and nuclear science STEM curriculum extension for middle school teachers and students from the U.S. Department of Energy. The teacher's kit includes a Teacher's Guide, Student Readers, pretest and post-test evaluation metrics, experiments and class activities, lecture presentations, a poster, video and historic film, interactive computer educational games, and evaluations for both teacher and students. The DOE Office of Nuclear Energy collaborated with hundreds of classroom teachers, our national laboratories, leading universities, leading state and national teacher associations, and innovative technology firms in the private sector to support science, technology, engineering, and math (STEM) education. The purpose of this teacher kit is to help students understand the energy technologies and options that play an increasingly crucial role in their lives and in our world. The careers emphasis in the curriculum encourages the technical skills required to maintain our national energy infrastructure. An important goal is to raise awareness for students interested in sciences and engineering, including nuclear engineering, and to help prepare them to make informed choices about possible majors and careers.	Grades 6-9, HS where appropriate	Robert Skinner
In the News - Using Problem Based Learning to Teach Ecology	Textbooks often take students to far-off places to learn about ecology. This strand will give teachers the tools to teach about ecology in a tangible and available environment – their own schoolyard. Whether the schoolyard is a sea of cement and grass or contains a diverse garden or forest, the opportunity for students to investigate first-hand will deepen their understanding of ecology, ways to measure it, and the impact people have on it. This strand will teach participants innovative ways to infuse STEM into environmental education as we learn about our native habitats, and threats to those habitats including invasive species, water pollution and drought, and decreases in biodiversity.	Grades 4-8	Alana Jensen

Strand Name	Strand Description	Grade Level Focus	Presenter
Teaching Mathematical Thinking	This strand runs Monday to Friday 8:00 am to 5:30 pm due to State Board of Education contact hour requirements. TMT provides an opportunity to study fundamental mathematical theory underlying number and operation, and student reasoning of number and operation topics, within a framework of a student-centered, problem-based classroom. Topics include number systems, ways of representing numbers, meanings of operations, and computation within the number system as a foundation for algebra. Pedagogical topics focus on attending to student thinking and reasoning through the use of discourse and questioning, professional noticing, and the effective use of manipulatives or other mathematical tools.	Grades K-5	
Idaho State University: June 21-24			
Administrative Strand - One Day Workshop (June 22)	Establishing essential learning targets and aligning our curriculum to the Idaho Core and Next Generation Science Standards has its challenges. What are we going to teach? How are we going to teach it? How are we preparing our teachers? The integration of STEM and other best practices will assist us in preparing our students for the workplace of today and tomorrow. Administrators in this workshop will experience the excitement of an integrated STEM activity. They also will define action plans for implementing "Inquiry Teaching", and bolstering the STEM process in their schools. Participants will have a hands-on experience using diverse types of activities and technology to this end. Project: A completed action plan of implementation involving the Idaho Core as well as the Next Generation Science Standards in their schools. (STEM Related) Activities: 1. Parable Mirror study reflecting optical illusions. 2. Studying Sound waves through music and a ukulele. Using many disciplines to educate students by integration and cross-curricular teaching. Emphasis will be given to the details and writing about the science experience using details and supportive facts.		Lyndon Oswald

Strand Name	Strand Description	Grade Level Focus	Presenter
Nourishing the Planet in the Twenty-First Century	The earth resources are used to feed the world, being scarce we need to use them wisely. Feeding the world in the next 50 years will take a lot of new workers and new technologies. Lots of hands on materials (labs) and procedures that can be adapted to any classroom and any age will be provided. Modern technology will be used to create the 21st century classroom learning environment where careers and the high tech world of Agriculture can be explored. The main topics will be soil health and plant growth with many side topics that relate.	Grades 4-12	Vine Wray
Empowering the Next Generation Through Computer Science	Participants will learn how to teach computer science skills such as critical thinking, logic, persistence and creativity in problem-solving aligned to all subject areas. Participants will learn about the Code.org curriculum along with MIT Media Lab's Scratch Programming Language and App Inventor to create meaningful projects that can easily be implemented in the K12 classroom. Additionally teachers will utilize Arduino boards to create projects that extent beyond the traditional computer interface.	Grades K-8	Heidi Pluska
Teaching Nuclear Science	Explore innovative concepts and tools to teach nuclear science, energy, safety, and engineering principles. Get new ideas to help students understand radiation and the physics of energy from the nucleus of atoms. Preview The Harnessed Atom, a 10-lesson kit that engages students with hands-on experiments, interactive learning, and career opportunities. This workshop introduces The Harnessed Atom, a new energy and nuclear science STEM curriculum extension for middle school teachers and students from the U.S. Department of Energy. The teacher's kit includes a Teacher's Guide, Student Readers, pretest and post-test evaluation metrics, experiments and class activities, lecture presentations, a poster, video and historic film, interactive computer educational games, and evaluations for both teacher and students. The DOE Office of Nuclear Energy collaborated with hundreds of classroom teachers, our national laboratories, leading universities, leading state and national teacher associations, and innovative technology firms in the private sector to support science, technology, engineering, and math (STEM) education. The purpose of this teacher kit is to help students understand the energy technologies and options that play an increasingly crucial role in their lives and in our world. The careers emphasis in the curriculum encourages the technical skills required to maintain our national energy infrastructure. An important goal is to raise awareness for students interested in sciences and engineering, including nuclear engineering, and to help prepare them to make informed choices about possible majors and careers.	Grades 6-9, HS where appropriate	Robert Skinner

Strand Name	Strand Description	Grade Level Focus	Presenter
STEM on the Playground for Pre-Service and New to the Profession Teachers	The purpose of the strand is to provide hands-on teaching experiences for pre service teachers and teachers with less than three years teaching experience. The strand will show participants how to integrate the excitement STEM brings to the curriculum with outstanding literature (both fiction and nonfiction) and all this using local school grounds to enhance classroom instruction. Strand participants will have the opportunity to learn in the morning and then teach those lessons to k-6 students in the afternoon. Participants will leave the strand with lesson ideas they have actually taught in the classroom. The life sciences and related math skills will be heavily emphasized. Life science and math will be integrated with pertinent literature and will use playgrounds for the instructional setting. Participants will come away with lots of ideas for using STEM subjects to meet Next Generation Science Standards, suggestions for using good literature to reinforce the STEM instruction while meeting state literary standards, and methods for utilizing playgrounds for maximum learning and excitement.	Grades K-6	Mike Winston
Sticks and stones may break my bones; but Material Science will heal them better	Material science is the “new black” when it comes to STEM. In this strand, participants will learn about metals, ceramics, polymers, composites, semi-conductors, and exciting biomaterials during this interdisciplinary investigation into the world of material science. We will explore the scientific fundamentals of materials, their design and real world application as participants learn to apply the basic principles of chemistry and physics to materials and leave with the ability to design processes to manipulate materials to meet the needs of modern technology.	Grades 4-8	Sally Mitchell

Strand Name	Strand Description	Grade Level Focus	Presenter
Lewsi-Clark State College: June 20-23			
Administrative Strand - One Day Workshop (June 21)	Establishing essential learning targets and aligning our curriculum to the Idaho Core and Next Generation Science Standards has its challenges. What are we going to teach? How are we going to teach it? How are we preparing our teachers? The integration of STEM and other best practices will assist us in preparing our students for the workplace of today and tomorrow. Administrators in this workshop will experience the excitement of an integrated STEM activity. They also will define action plans for implementing "Inquiry Teaching", and bolstering the STEM process in their schools. Participants will have a hands-on experience using diverse types of activities and technology to this end. Project: A completed action plan of implementation involving the Idaho Core as well as the Next Generation Science Standards in their schools. (STEM Related) Activities: 1. Parable Mirror study reflecting optical illusions. 2. Studying Sound waves through music and a ukulele. Using many disciplines to educate students by integration and cross-curricular teaching. Emphasis will be given to the details and writing about the science experience using details and supportive facts.		Lyndon Oswald
Teaching Science By Design	The focus of this strand will be: to explore foundational steps to engage students in science lessons, how to collect and analyze data, and finally how to guide students to internalize what they have learned. Teachers will learn an organizational format that will stimulate students' learning of science, enhance student skills in reading and writing aligned with science, and support applied math within a real world context. Oh… and have fun along the way.	Grades 4-6	Kevin Collins

Strand Name	Strand Description	Grade Level Focus	Presenter
3D Printing and Computer Coding	STEM jobs and careers are today's students' future. Computer Science drives the job market as well as innovation for community and entertainment. 3D printers print designs electronically coded, or programmed. It is used by manufacturers, designers, medical professionals, engineers and artists. In this century learning computer language and algorithms, or 'code' is foundational. Strand participants will be introduced to 3D Modeling technology by creating and printing designs. The goal is creating and printing designs using a 3D printer. Participants will learn basic coding using a programmer-oriented solid modeling tool, OpenSCAD, and given resources to promote 3D printing in the classroom.	Grades 4-12	Dinah Gaddie
Teaching to the NGSS - Investigations to Discover STEM, 'OH, WOW!' CONCEPTS	Student-led inquiry investigations of fossils, minerals, rocks, and other objects promote critical thinking skills which are necessary to understand real-world connections. In this strand, participants are provided an opportunity to apply the 8 science practices of NGSS to achieve (grades 7 – 9) Middle School Earth & Space Science performance expectations. Attendees will investigate earth science mysteries designed to make connections between disciplinary core ideas in science and state standards for mathematics and language arts. Each participant will receive the Rock Detective Program kit for the materials to support NGSS instruction. The strand will culminate in a field trip to Dworshak Dam, Idaho.	Grades 7-9	Cheryl Young, Ph.D.
iSTEM – It All Adds Up	iSTEM, It All Adds Up delves into the eight math practice standards. Whatever your curriculum, these standards are a guide to good math instruction. They are the foundation for rich thinking and engaging instruction. Participants will learn how to incorporate these standards into their current curriculum. They will learn strategies, receive hands on activities, learn alternative methods for assessing student learning, and learn how to plan engaging instruction.	Grades K-3	Michelle Stratton

Strand Name	Strand Description	Grade Level Focus	Presenter
North Idaho College: June 20-23			
Administrative Strand - One Day Workshop (June 20)	Establishing essential learning targets and aligning our curriculum to the Idaho Core and Next Generation Science Standards has its challenges. What are we going to teach? How are we going to teach it? How are we preparing our teachers? The integration of STEM and other best practices will assist us in preparing our students for the workplace of today and tomorrow. Administrators in this workshop will experience the excitement of an integrated STEM activity. They also will define action plans for implementing "Inquiry Teaching", and bolstering the STEM process in their schools. Participants will have a hands-on experience using diverse types of activities and technology to this end. Project: A completed action plan of implementation involving the Idaho Core as well as the Next Generation Science Standards in their schools. (STEM Related) Activities: 1. Parable Mirror study reflecting optical illusions. 2. Studying Sound waves through music and a ukulele. Using many disciplines to educate students by integration and cross-curricular teaching. Emphasis will be given to the details and writing about the science experience using details and supportive facts.		Lyndon Oswald
Scratch and WeDo integration in the classroom	We will be working to integrate Scratch and WeDo into current classroom curriculum. These platforms are an easy way to introduce computer science into the middle school classroom. After taking this class teachers will feel comfortable with the following objectives: (1) Be able to program simple games and stories in Scratch. (2) Use the WeDos to interface with programming		Andrea Baerwald
Probability and Statistics in Gaming	From simple dice rolling to casino games and board games and table top RPGs, probability and the idea of randomness is inundated with games. This strand uses these activities to introduce students to the basic rules and ideas behind probability and statistics and analyzes how games of all kinds use randomness and probability to add exciting and challenging gameplay for various audiences. Educators will leave this strand with a classroom set of materials that can easily be taken into the Secondary Mathematics classroom to help students to understand fundamental statistics principles.	6-12 Math	Brian Mattison

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Getting Dirty with STEM	Discover how the geologic processes in your local area effect the communities that exists there through what grows there- its agriculture. Participants in this strand will engineer soil column with simple materials and use it as a basis for learning geology (earth science), soil science, and agricultural science STEM across grade levels, subject areas, and NGSS science content standards. A series of hands-on inquiry activities and field trips will support the learning. Participants will receive a kit of materials that can be used in multiple ways in varying classroom settings to simulate geologic processes for analytical analyses.	Grades 4-12	Eian Harm
Sights and Sounds	This strand is an introduction to the technology of video and the engineering of sound. Part of the kit will be kits with enough for a class to work in small groups. We will build speakers, edit video, create animations, and explore the history of audio visual technology.	Elementary	Sean O'Brady